



# INTERNATIONAL JOURNAL OF PHARMACEUTICAL RESEARCH AND BIO-SCIENCE

## ETHNOBOTANICAL STUDY OF SOME MEDICINAL PLANTS OF THAL DESERT PUNJAB PAKISTAN.

SOBIA NIAZ<sup>1</sup>, TASVEER ZAHRA BOKHARI<sup>1</sup>, SIKANDAR KHAN SHERWANI<sup>2</sup>, UZMA YOUNIS<sup>1</sup>,  
ALTAF AHMAD DASTI<sup>1</sup>

1. Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan, Pakistan.
2. Department of Microbiology, Federal Urdu University of Arts, Science and Technology.

Accepted Date: 01/10/2013; Published Date: 27/12/2013

**Abstract:** The main aim of the present study was to evaluate the medicinal importance of Thal dessert plants which are chiefly used by people of the study area. In year 2010 almost 72 plants were collected which belongs to 64 genera and contains 31 families and had main medicinal applications in remediation of 45 ailments. Medicinal data of the study area was collected by various field trips. The main component of this paper is ethnobotanical detail of the collected plant species. The collected plant species were arranged on herbarium sheets after drying and submitted in M. H. Herbarium of Bahauddin Zakariya University, Multan, Pakistan. 10 species of Thal dessert are used in the treatment of stomach problems, while other species have also many important medicinal uses in the respective area.

**Keywords:** Ethnobotany, medicinal plants, floristic list, Thal desert.



PAPER-QR CODE

Corresponding Author: MR. SIKANDAR KHAN SHERWANI

Access Online On:

[www.ijprbs.com](http://www.ijprbs.com)

How to Cite This Article:

Sikandar Khan Sherwani, IJPRBS, 2013; Volume 2(6): 31-41

## INTRODUCTION

As diverse landscape of Pakistan, it also has diverse vegetation. These diverse habitat include sandy beaches, mangroves, deserts, mountain ranges, plateaus and valleys and each habitat has its own complex and different vegetation. From the prehistoric era the therapeutic plants have utilization to cure many diseases. Because these medicinal plants are used by local people that why lot of scientists and taxonomists are working on the data of these medicinal plants throughout the world (Chopra, 2006). Pakistan as rich in herbaceous plants offers scientists to explore the medicinal importance of plants. With increasing needs of more and advanced drugs for the treatment of recent diseases, there is need to investigate the medicinal importance of indigenous plants. According to Hammiche et al., (2006) there are almost 6000 species of floristic plants in Pakistan of which 400-600 are reported as remedial plants. In sandy deserts of Punjab the local plants are utilized rapidly to accomplish the daily needs of inhabitants. Therefore, present work was carried out to report the medicinal applications of native plants of Thal desert, Punjab. From centuries the uses of plants by human beings increased rapidly which lead towards documentation processes of pharmacognosy and emphasize on the conservation of plant species of native areas (Nandagopalan, 2011)

Hence, the data about valuable ethnobotanical plants is less, so, there feels a need for proper documentation of medicinal plants of almost all the areas of the world. The information about valuable plants is meager. In Pakistan number of medicinal papers from many areas of the country were published time to time (Khan et al., 2003; Jabeen et al., 2009; Qureshi et al., 2010; Ahmad et al., 2011).

In the present study it was preferred that local plants were collected and after identification their medicinal uses were explore on the bases of survey data because there is less or no data about medicinal uses of Thal desert flora. There were following aims and objective to carry out the present study:

1. To explore the ethnobotanical uses of Thal desert plants in the form of catalog of different species.
2. To study the medicinal applications of native plant species and providing data for further work to investigate pharmacological and phytochemical importance of these plant.
3. To alert the native people about conservation of their cultural species for their coming generation.

## Methodology

### Study Area

The Thal desert is located in Punjab, Pakistan near Jhelum and Indus river sites and goes up to north in Potohar Plateau. Thal desert has 305.71 Km length and 112.63 Km breadth. This desert is alienated into the districts of [Jhang](#), [Muzaffargarh](#), [Layyah](#), [Khushab](#), [Mianwali](#), and [Bhakkar](#).

**Climate:** The study area has hot climate because it is arid region and has brown colour soil. The area has 51.6°C temperature in summer, while, it's below freezing point in winter. 128 mm to 178 mm is the average rainfall of Thal desert. Sometime there is too much less rainfall and ranges from 2 to 4 years. Therefore, there is scanty of water in Thal, the water which is present in water table is also brackish and present at the depth of 25-90 m. That's why natural vegetation is mostly damaged by drought stress.

**Collection of ethnomedicinal data:** During 2010-2011 the study area was surveyed and the plant specimens were collected on the bases on local people knowledge. Generally, the old local peoples were interviewed to gather the information about medicinal uses of native plants. The collected plant material was identified from published research data (Nasir & Ali 1970-1989; Ali & Nasir 1997; Ali & Qaiser, 1986, 1995-2007) and submitted in M. H. Herbarium of B. Z. University for future record and references.

### Results and Discussions

In neighboring countries lot of data is available about medically essential plants and uses of these plants by local peoples mainly in India, which shares habitats similar to the desert. Unfortunately, medicinal importance of Thal desert plant is not still published or documented. Contribution of different families in Thal desert plants is represented in Figure 1. The plant species which are extensively used as a Cardiovascular disorder including blood purification and heart and circulatory system problems like anaemia and cardiac troubles are *Prosopis cineraria*, *Tribulus terrestris*, *Kochia indica*, *Geisekia pharnacoides*, *Desmotachya bipinnate*. (Goyal & Sharma, 2009; Immanuel & Elizabeth, 2009). There are many other examples of native species whose uses and chemical constituents are not yet documented. *Acacia jacquemontii*, *Albizzia lebbek*, *Azadirachta indica*, *Calligonum polygonoides*, *Cynodon dactylon*, *Geisekia pharnacoides*, *Malvastrum coromendelianum*, *Phoenix dactylifera*, *Salsola baryosma*, *Tamarix diocica*, *Calotropis procera*, *Crotalaria burhia* and *Tribulus terrestris* are frequently applied for general infections. Flora like *Chenopodium album*, *Desmotachya bipinnate* and *Citrulus colocyntus* are generally applied for hepatic disorders, gastric and intestinal complaints including bloating, constipation, diarrhoea, dyspepsia and diminished appetite are *Calotropis procera*, *Alhagi maurorum* and *Aerva javanica*, (Immanuel and Elizabeth, 2009;

Marashdah & Al-Hazimi, 2010). Some species of Thal desert flora are used in skin infections as *Morus alba*, *Leptadenia pyrotechnica*, *Melilotus alba*, *Fagonia indica*, *Alhagi maurorum*, *Albizzia lebbek*, *Prosopis spicigera* and *Calotropis procera*, And few are used in vernal disease as *Tamarix diocica* and *Malvastrum coromendelianum*. Against intestinal worms a number of plant species are used which provide protection against microorganism and bacterias but *Azadirachta indica* has antiprotozoal, antibacterial, antifungal, activities (Table 1). Quite a few herbs, including *Crotalaria burhia* has properties of healing wounds and used as pain killer (Dalziel, 1948; Bose et al., 2007; Kataria et al., 2010) while *Acacia nilotica*, *Calotropis procera* used as tonics (Chopra et al., 2006; Jabeen et al., 2009).

Some plants are well known for their excellent treatment of ENT Problem like *Azadirachta indica*, *Calligonum polygonoides*, *Calotropis procera*, *Conyza Canadensis*, *Indigofera oblongifolia*, *Prosopis cineraria* and *Prosopis spicigera*. While chronic diseases: *Trianthema triquetra* are antihepatotoxic, (Ahmad & Eram, 2011; Chitra & Bala et al., 2010; Nithyanandhi, 2007). People of Thal used different native plant species to treat various diseases (Figure 2). People frequently use *Prosopis spicigera*, *Phoenix dactylifera*, *Melilotus alba*, *Morus alba*, *Ficus religiosa*, *Desmotachya bipinnate*, *Calotropis procera* and *Gisekia pharnacioides*, for respiratory infections like asthma, common cough and bronchitis (Immanuel and Elizabeth, 2009; Rizk & El-Ghazaly, 1995; Stella et al., 2004). For digestive tract problem *Leptadenia pyrotechnica*, is used. *Gisekia pharnacioides* and *Salsola* species are useful for disorders like hypertension and leprosy (Chopra et al., 2006; Hammiche & Maiza, 2006; Nandagopalan et al., 2011). *Geisekia pharnacioides*, *Heliotropium strigosum*, *Launea procumbens*, *Tribulus terrestris*, *Citrullus colocynthis* and *Aerva javanica* are enormously practical for urinary structure troubles, particularly for stones of kidney and bladder (Khan et al., 2003; Dagar, 2005; Sharif et al., 2011). A series of herbs are used for Gynecological disorder among them are more useful are *Aerva javanica*, *Fagonia indica*, *Heliotropium strigosum*, and *Phoenix dactylifera* (Table 4). *Leptadenia pyrotechnica*, *Aerva javanica*, are useful for aches, pains and cuts and wounds (Mahesh & Satish, 2008; Goyal & Sharma, 2009; Immanuel & Elizabeth, 2009; Qureshi et al., 2010) and *Saueda fruticosa* for ophthalmia, (Immanuel & Elizabeth, 2009). *Alhagi maurorum* is useful for liver inflammation, (Bala et al., 2010; Atta et al., 2011). *Tribulus terrestris*, *Leptadenia pyrotechnica* and *Citrullus colocynthis* are for Muscular/Skeleton disorder (Figure 3).

## Conclusion

The relationship between people and plants has always been profoundly important. Plants play an important role in every aspect of our lives and without them life is not possible. Plants not only regulate the concentration of gases in the air, but also the only organisms capable of transforming sunlight into food energy on which all other forms of life ultimately depend upon.

Income from collection and sale of medicinal plants is thought to be marginalized by lack of awareness regarding local and overseas market requirement, local shopkeepers, agents and Hakeems. The consumers obtain supplies from individuals who have little experience in medicinal herb preparations or in understanding of its value. As a result valuable economic and medicinal plants of the investigated area are becoming rare and some are at the verge of local extinction. Therefore, efforts should be to conserve these valuable plants for future generations.

**Table 1: Pharmacological importance of Thal Desert plant parts with their family's representation.**

Plants	Family	Root	Stem	Leaves	Flower	Bark	Pod	Seeds/Fruit	Diseases
<i>Acacia jacquemonti</i>	Mimosaceae	-	+	-	-	-	-	-	Gi
<i>Aerva javanica</i>	Amaranthaceae	-	+	+	-	-	-	-	Aa, Gi, Gd
<i>Albizzia lebbek</i>	Mimosaceae	-	-	+	+	+	+	-	Dd, Gi, Sd
<i>Alhagi maurorum</i>	Papilionaceae	+	+	+	+	+	+	+	Dd
<i>Azadirachta indica</i>	Meliaceae	-	-	+	+	-	-	+	Gi, Ent, Ab, Af, Ap
<i>Calligonum polygonoides</i>	Polygonaceae	+	-	-	-	-	-	-	Ent
<i>Calligonum polygonoides</i>	Asclepiadaceae	+	-	-	-	-	-	-	Gi
<i>Calotropis procera</i>	Asclepiadaceae	+	+	+	+	+	+	+	Gi, Ent, Dd, Ri
<i>Chenopodium album</i>	Chenopodiaceae	+	+	+	+	+	+	+	Sd, Ld
<i>Citrus colocyntus</i>	Cucurbitaceae	-	-	-	-	-	-	+	Ld, Gi, Rd, Msd
<i>Conyza Canadensis</i>	Asteraceae	+	+	+	+	+	+	+	Ent
<i>Crotalaria burhia</i>	Resedaceae	+	-	-	-	-	-	-	Gi
<i>Cynodon dactylon</i>	Poaceae	+	-	+	-	-	-	-	Gi
<i>Dalbergia sissio</i>	Papilionaceae	-	-	+	-	-	-	-	Sd
<i>Desmotachya bipinnate</i>	Poaceae	+	-	+	-	-	-	-	Ri, Ld, Cd
<i>Fagonia indica</i>	Zygophyllaceae	+	+	+	+	+	+	+	Gd, Dd
<i>Ficus religiosa</i>	Moraceae	-	-	-	-	+	-	+	Rd, Sd, Gi, Ri
<i>Geisekia pharnacoides</i>	Ficoidaceae	-	-	-	-	+	-	+	Vd, Cd, Gi, Sd, Rd
<i>Heliotropium strigosu</i>	Boraginaceae	+	+	+	+	+	+	+	Gd, Rd, Msd

<i>Indigofera oblongifolia</i>	Papilionaceae	+	+	+	+	+	+	+	Ent
<i>Kochia indica</i>	Chenopodiaceae	-	+	-	-	-	-	-	Cd
<i>Launea procumbens</i>	Asteraceae	+	+	+	+	+	+	+	Sd, Rd
<i>Leptadenia pyrotechnica</i>	Asclepiadaceae	+	+	+	+	+	+	+	Dd, Gd, Msd
<i>Morus alba</i>	Moraceae	-	-	+	-	-	-	+	Sd, Gi, Dd, Ri
<i>Malvastrum coromendelianum</i>	Malvaceae	-	-	+	+	-	-	-	Vd, Gi
<i>Melilotus alba</i>	Papilionaceae	+	+	+	+	+	+	+	Dd, Ri
<i>Phoenix dactylifera</i>	Palmaceae	+	+	+	+	+	+	+	Gi, Vd, Ri, Dd, Gd
<i>Prosopis cineraria</i>	Mimosaceae	-	-	-	-	-	+	-	Ent
<i>Prosopis spicigera</i>	Mimosaceae	-	-	+	+	+	-	-	Sd, Dd, Ent, Ri
<i>Salsola baryosma</i>	Chenopodiaceae	+	+	+	+	+	+	+	Gi
<i>Saueda fruticosa</i>	Chenopodiaceae	+	+	+	+	+	+	+	Ed, Sd
<i>Tamarix diocica</i>	Tamaricaceae	-	+	+	-	-	-	-	Vd, Sd, Gi
<i>Tribulus terrestris</i>	Zygophyllaceae	-	-	+	-	-	-	-	Cd, Msd, Gi, Rd

### Key to the medical terms

Nd =Neurological disorder      Cd= Cardiovascular disorder      Sd =Skin disorder

Dd =Dermatological disorder      Ld =Hepatic disorder      Rd =Renal disorder

Aa =Allergies      Ed =Eye Problem

Ent =ENT Problem      Gi = General Infection      Dd = Diabetes

Vd= Vernal disease      Gd= Gynecological disorder      Ri= Respiratory Infections

Af= Antifungal      Ab= Anti bacterial      Ap =Antiprotozoal

Av= Antiviral      Msd= Muscular/Skeleton disorder

Figure 1: Contribution of different families in medicinal plant species of Thal Dessert Punjab, Pakistan.

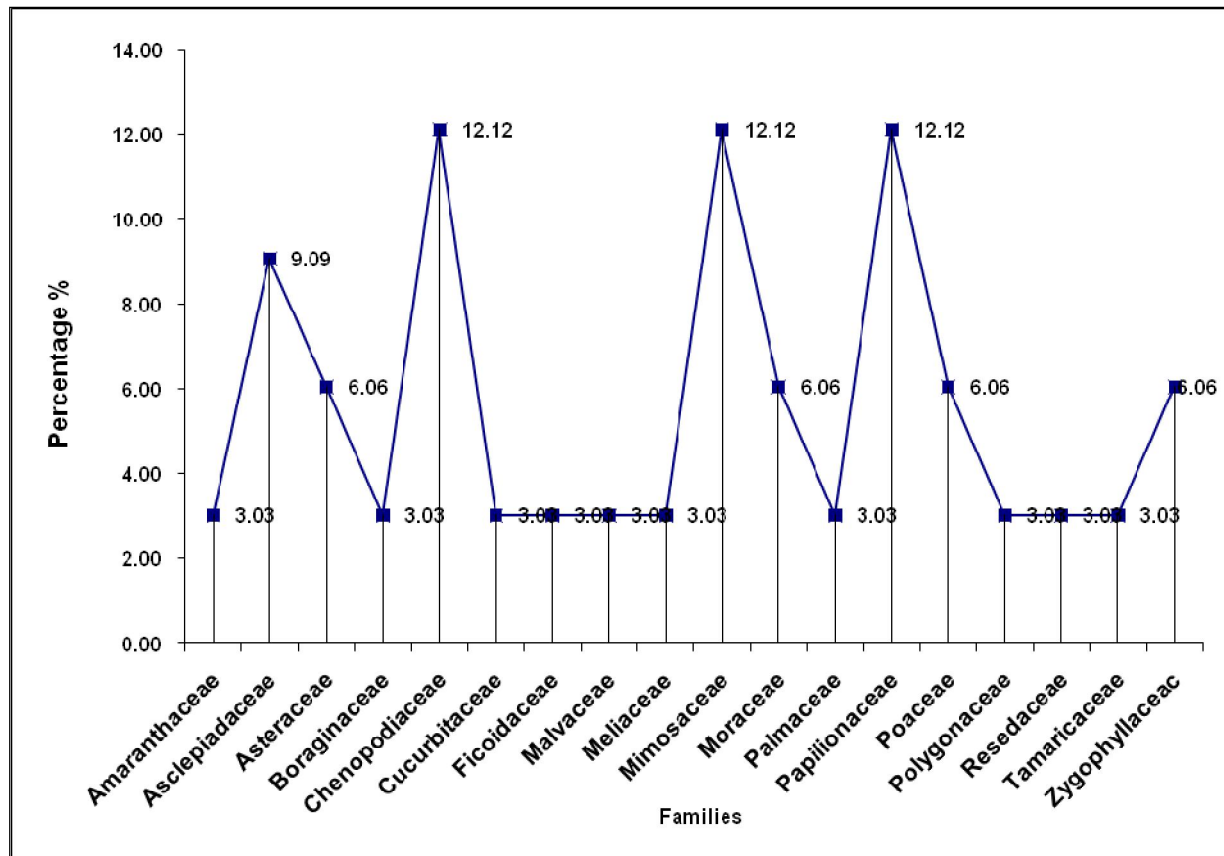


Figure 2: Relative importance of Thal dessert species in pharmacognosy.

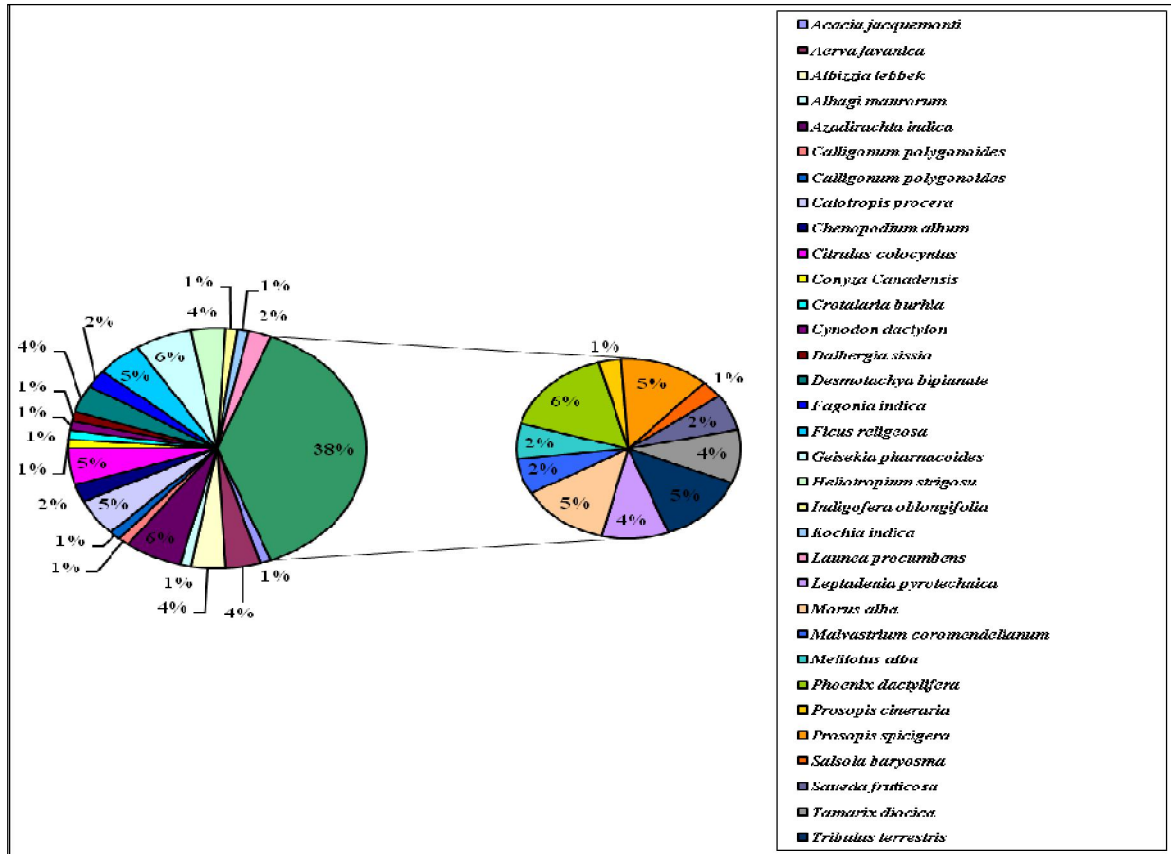
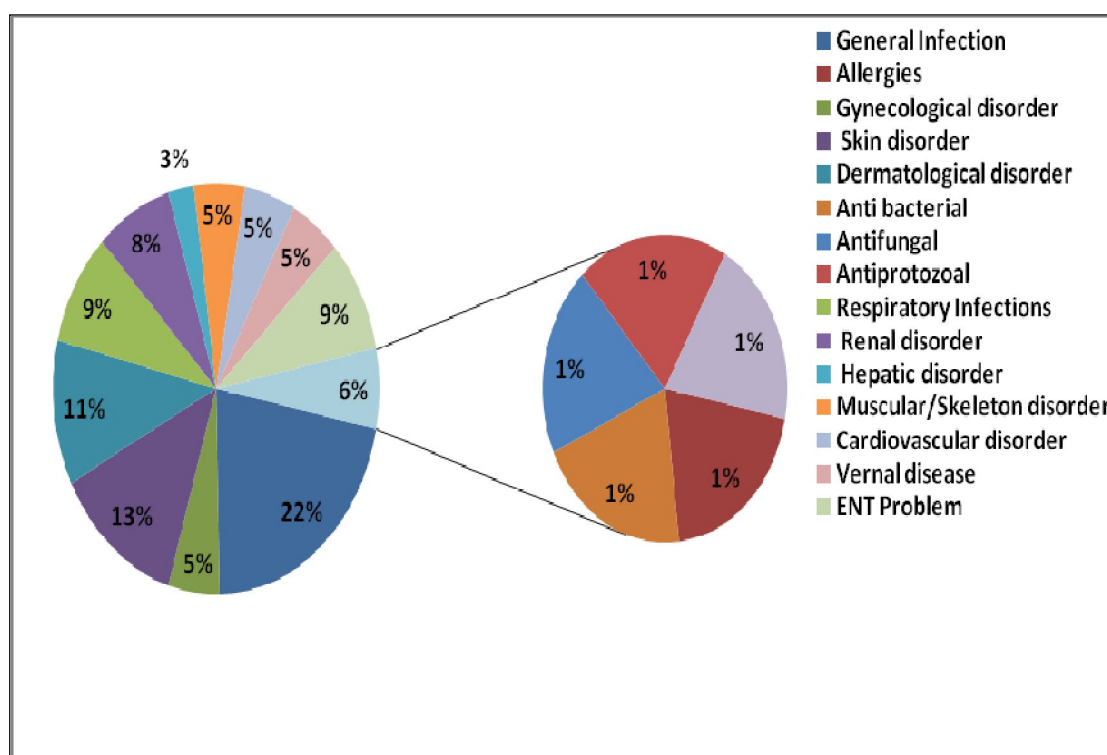




Figure 3: Percentage wise distribution of utilization of Thal Dessert plants in different diseases.



## References

1. Ahmad, M. and S. Eram. 2011. Hepatoprotective studies on *Haloxylon salicornicum*: A plant from Cholistan desert. Pak. J. Pharm. Sci., 24: 377-382.
2. Ali S.A. and Qasier, M. (1986) A phytogeographical Analysis of the phanerogams of
3. Ali S.I. and M. Qaiser, 1995-2007. Flora of Pakistan. Fascicles, Dept. of Bot., Univ. of Karachi, Karachi.
4. Ali, S.I. In Y.J. Nasir and S.I. Ali. (eds.). 1977. Flora of Pakistan 100: 344.
5. Atta, A.H., S.M. Nasr, S.M. Mounier, N.A. Al-Wabel and S. Soha. 2011. Evaluation of the diuretic effect of *Conyza dioscoridis* and *Alhagai maurorum*, Essawy. Int. J. Pharm. Pharmaceut. Sci., 2: 162-165

6. Bala, A., B. Kar, P.K. Haldar, U.K. Mazumder and S. Bera. 2010. Evaluation of anticancer activity of *Cleome gynandra* on Ehrlich's Ascites Carcinoma treated mice. *J. Ethnopharm.*, 129: 131-134
7. Bose, A., S. Mondal, J.K. Gupta, T. Ghosh and G.K. Dash. 2007. Analgesic, anti-inflammatory and antipyretic activities of the ethanolic extract and its fractions of *Cleome rutidosperma*. *Fitoterapia*, 78: 515-520.
8. Chitra, M. and K. Nithyanandhi. 2007. Radical scavenging activity of *Trianthema triquetra* in male albino rats intoxicated with CCl<sub>4</sub>. *J. Environ. Biol.*, 28: 283-5.
9. Chopra, R.N., S.L. Nayar and I.C. Chopra. 2006. Glossary of Indian Medicinal Plants. National Institute of Science Communication and Information Resources, New Delhi.80.
10. Dagar, J.C. 2005. Ecology, management and utilization of halophytes. *Bull. Nat. Inst. Ecol.*, 15: 81-97.
11. Dalziel, J.M. 1948. Useful Plants of West Tropical Africa. Crown Agents for the Colonies, London, pp. 178-180
12. Goyal, M. and S.K. Sharma. 2009. Additional wisdom and value addition prospects of arid foodsof desert region of North West India. *Ind. J. Trad. Knowl.*, 8: 581-585.
13. Hammiche, V. and K. Maiza. 2006. Traditional medicine in Central Sahara: Pharmacopoeia of Tassili N'ajjer. *J. Ethnopharm.* 105: 358-367.
14. Haq, I. 2004. Safety of medicinal plants. *Pak. J. Med. Res.*, 43: 153-156.
15. Immanuel, R.R. and L.L. Elizabeth. 2009. Weeds in agroecosystems: A source of medicines for human healthcare. *Int. J. Pharm. Tech. Res.*, 1: 375-385.
16. Jabeen, A., M.A. Khan, M. Ahmad, M. Zafar and F. Ahmad. 2009. Indigenous uses of economically important flora of Margallah Hills National Park, Islamabad, Pakistan. *Afr. J. Biotechnol.*, 8: 763-784.
17. Kataria, S., B. Shrivastava, R.K. Khajuria, K.A. Suri and P. Sharma. 2010. Antimicrobial activity of *Crotalaria burhia* Buch.-Ham. roots. *Ind. J. Nat. Prod. Resour.*, 1: 481-484.
18. Khan, T.I., A.K. Dular and D.M. Solomon. 2003. Biodiversity conservation in the Thar Desert; with emphasis on endemic and medicinal plants. *Environmentalist*, 23: 137-144
19. Mahesh, B. and S. Satish. 2008. Antimicrobial activity of some important medicinal plants against plant and human pathogens. *World J. Agric. Sci.*, 4: 839-843

20. Marashdah, M.S. and H.M. Al-Hazimi. 2010. Pharmacological activity of ethanolic extract of *Alhagi maurorum* roots. Arab. J. Chem., 3: 39-42.
21. Nandagopalan, V., S.P. Anand, U. Selvakumar and A. Doss. 2011. An ethnobotanical study in the Pudukkottai District, South India. Asian J. Exp. Biol. Sci., 2: 412-421.
22. Nasir, E. and Ali. S.I., (eds). 1971-1995. Flora of Pakistan. Fakhri Printing Press Karachi. Pakistan and Kashmir, Proceedings of the Royal Society of Edinburgh, 89B, 89-101.
23. Qureshi, R., G.R. Bhatti and R.A. Memon. 2010. Ethnomedicinal uses of herbs from northern part of Nara desert, Pakistan. Pak. J. Bot., 42: 839-851.
24. Rizk, A.M. and G.A. El-Ghazaly. 1995. Medicinal and Poisonous Plants of Qatar. University of Qatar. Scientific and Applied Research Centre, p. 101
25. Sharif, A., E. Ahmed, A. Malik, Mukhtar-ul-Hassan, M.A. Munawar, A. Farrukh, S.A. Nagra, J. Anwar, M. Ashraf and Z. Mahmood. 2011. Antimicrobial constituents from *Aerva javanica*. J. Chem. Soc. Pak., 33: 439-443.
26. Stella, U.Y., E. Sasikala, G.S. Rao and J. Sangeetha. 2004. Pharmacognostic studies on *Gisekia pharnacioides* Linn. Ancient Sci. Life, 23: 1-7.